CITY OF HOUSTON

Public Works & Engineering Department
Planning & Development Services Division
GRADING PERMITS FOR EXCAVATIONS AND FILL
Effective Date: May 1, 2005

SUMMARY SHEET

PERMITS

A grading permit is required for dirt fill over 1 foot in depth and for excavations over 2 feet in depth for projects other than those listed in the following exceptions.

Exceptions for All Grading

- Isolated self-contained areas
- Refuse disposal sites
- Mining, quarrying, stockpiling not affecting adjacent property

Excavation Exceptions

- Building basements and footings
- Cemetery graves
- Wells, tunnels, or utilities
- Soil testing
- Up to 5 feet with less than 1:1½ slopes (66.7% slope)

Fill Exceptions

- Fill less than 1 foot placed on natural terrain with < 1: 5 slope. (20% slope)
- Fill up to 50 cubic yards & < 3 feet & no drainage obstructions & not intended to support structures.
  [50 cubic yards = 1350 sq. ft. @ 1 ft. depth]

Permit Fees

Excavation Permits …..…….. **$35.00**

Grading and Fill Permits ……..…. $**40.00**

PLAN REVIEW

The attached Grading Worksheet should be completed to determine whether a project requires a permit and the type of plans or reports required.

All Grading Plans Should Include:

- A Vicinity Map
- Existing Topography
- Proposed Topography
- Storm Letter if applicable
- Buildings within 15 feet of grading on adjacent property.

Engineered Plans - Projects involving more than 5,000 cubic yards of dirt to be moved within the site, to the site or from the site. [5,000 cubic yards = 135,000 sq. ft. @ 1' depth]

- Drainage Area and Devices
- Geotechnical Report
- Runoff Calculations

INSPECTIONS

Before starting work at jobsite:
Post address
Weather protected inspection cards
Weather Protected plans

At final inspection at jobsite:
Compaction Report

Geotechnical Reports Are Required For:

- Engineered Grading
- Cut Slopes > 50%
- Geological Factors

RETAINING WALLS

Provisions shall be made to prevent the accumulation of water or damage to any foundations on the premises or the adjoining property. When a lot or plot is graded to a higher or lower finish grade level exceeding 1 foot more than the natural grade on adjacent property, the owner of such lot or plot shall provide an engineered retaining wall or walls on his/her own property to protect the adjacent property from caving of earth or overflow of water

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GRADING PERMITS FOR EXCAVATIONS AND FILL

Appendix E of the Houston Adopted 2000 International Building Code as Amended specifies permit requirements for grading a lot of any size on private property. ***Section 1 - Identifies:*** When a separate *"Grading Permit"* is required. ***Section 2 - Identifies:*** The type of grading permit required, "*Engineered Grading or Regular Grading*", when a *"Geotechnical Report"* is required in the plans, and when a "*Storm Availability Letter*" is required to be attached to the submittal documents.

WORKSHEET

Grading Permits are required for any excavating or filling or combination thereof and includes:
Excavation Permits - Including work proposing the mechanical removal of earth material.
Fill Permit - Including a deposit and/or relocation of earth material placed by artificial means.

Section 1 When grading or fill permits and plans are required.

A Grading Excavation permit & plans are required if "Yes" is answered to any question 1 through 4.

_____ **(1)** Does the excavation work affect the lateral support or increase the stresses in, or pressure upon any adjacent, or contiguous property?
_____ **(2)** When excavating below finish grade for basements and footings of a building, retaining wall or other structures authorized by a valid building permit, will there be an unsupported excavation height greater than 5 feet after completion of such structure?
_____ **(3)** Will there be any excavation greater than 5 feet in depth?
_____ **(4)** Will the excavation create a cut slope 2 feet or more in height but less then 5 feet, with a slope steeper than 1 unit vertical in 1.5 units horizontal? (66.7% slope)

A Grading Fill permit & plans are required if "Yes" is answered to any question 5 through 10.
(50 cubic yards = 1350 sq. ft. @ 1 ft depth)

_____ **(5)** Does the fill work affect the lateral support or increase the stresses in, or pressure upon any adjacent, or contiguous property?
_____ **(6)** Does the scope of work include fill that is 3 feet or more in depth?
_____ **(7)** Does the scope of work include fill greater than 1 foot but less than 3 feet, with a slope that is equal to or greater than 1 unit vertical in 5 units horizontal? (20% slope)
_____ **(8)** Does the scope of work include fill that is greater than 50 cubic yards on any one lot?
_____ **(9)** Does the proposed fill obstruct any natural and/or previously constructed drainage course?
_____ **(10)** Is the proposed fill greater than 1 ft in depth and intended to support a structure, "now or in the future"?

Section 2 Type of permit and plans required.

NOTE: When the building official has cause to believe that geologic factors may be involved, grading will be required to conform to recommended grading, inspection, and testing by a *Professional Engineer*.

Engineered grading plans are required if "Yes" is answered to question 11. The engineered plans shall be designed, sealed, signed, and dated by a professional engineer. These grading permits shall be designated *"Engineered Grading". (5000 cubic yards = 135,000 sq. ft. @ 1 ft depth)*

_____ **(11)** Does the grading project exceed 5000 cubic yards?

Grading plans and permits shall be designated "*Regular Grading*" if "Yes" is answered on question 12:

_____ **(12)** Does the grading involve less than 5000 cubic yards?

A Geotechnical Report is required if "Yes" is answered to any one of questions 13, 14 or 15:

_____ **(13)** Will there be any cut slopes steeper than 1 unit vertical in 2 units horizontal (50% slopes)?
_____ **(14)** Is there any grading that requires an engineered design?
_____ **(15)** Does the site include any special geological features and/or considerations for any grading?

A Storm Availability Letter is required to be included with the submitted documents if "Yes" is answered to questions 16 or 17:

_____ **(16)** Does the scope of work to lots exceeding 15,000 sq. ft., include any new impervious cover?
_____ **(17)** Does the project include new or relocated connections to the city's public storm sewer system?

PRINT CLEARLY

Applicant Name: _____ *Date:* _____ *Project Number:* _____
Address: _____ *Signature:* _____

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GUIDELINE

Appendix E of the Houston Adopted 2000 International Building Code as Amended specifies permit requirements for grading a lot of any size on private property. The following guideline identifies when a separate grading permit is required and outlines plan review requirements for permitting.

PERMITS REQUIRED

Grading Permits and plan are required for any excavating or filling or combination thereof and includes:

Excavation Permits – Including work proposing the mechanical removal of earth material.
Fill Permits – Including a deposit and/or relocation of earth material placed by artificial means.

A grading permit and plans are required prior to excavation or filling on any lot for other than the following exceptions. (2000 IBC, Appendix E103.1)

Excavation Exceptions	Fill Exceptions
Grading in an isolated, self-contained area if there is no danger to private or public property.	Grading in an isolated, self-contained area if there is no danger to private or public property.
Refuse disposal sites controlled by other regulations. (dump)	Refuse disposal sites controlled by other regulations. (dump)
Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay where established and provided for by law, provided such operations do not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.	Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay where established and provided for by law, provided such operations do not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.
	A fill that: (1) Is less than 1 foot (305 mm) in depth *and* placed on natural terrain with a slope flatter than 1 unit vertical in 5 units horizontal, (20% slope) or (2) Does not exceed 50 cubic yards (38.3 m^3) on any one lot *and* is less than 3 feet (914 mm) in depth, *and* does not obstruct a drainage course *and* is not intended to support structures. ***[50 cubic yards = 1350 sq. ft. @ 1 ft depth]***
An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. This shall not exempt any fill made with the material from such excavation or exempt any excavation having an unsupported height greater than 5 feet (1524 mm) after the completion of such structure.	
Cemetery graves.	
Excavations for wells or tunnels or utilities.	
Exploratory excavations under the direction of soil engineers or engineering geologists.	
An excavation that: (1) Is less than 2 feet (610 mm) in depth, or (2) Does not create a cut slope greater than 5 feet (1524 mm) height and steeper than 1 unit vertical in 11/2 units horizontal. (66.7% slope)	

PLANS REQUIRED

Application – Application for a grading permit shall be accompanied by two sets of plans and specifications. ***The application must contain data regarding the number of cubic yards involved in the grading, for both excavation and fill.***

Engineered Grading: Grading in excess of 5,000 cubic yards (3825 m³) shall be performed in accordance with the approved grading plan prepared by a Texas Registered P.E. and be designated "***Engineered Grading***".

[5,000 cubic yards = 135,000 sq. ft. @ 1' depth]

Regular Grading: Grading involving less than 5,000 cubic yards (3825 m³) shall be designated "***Regular Grading***".

ENGINEERED GRADING

The plans shall include sheets that provide the following information:

1. **Vicinity Map** - General vicinity of the proposed site.
2. **Existing Topography** - Property limits and accurate contours of *existing* ground and details of terrain and area drainage. Elevations within 1 foot of adjacent property at the property line.
3. **Proposed Topography** - Limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.
4. **Drainage Area and Devices** - Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.
5. **Runoff Calculations -** The estimated storm water runoff of the area served by any drains.
6. **Buildings in Area and Adjacent to Area** - Location of any buildings or structures on the property where the work is to be performed, and the location of any buildings or structures on land of adjacent owners that are within 15ft (4572 mm) of the property (dimensions specified) or that may be affected by the proposed grading operations.
7. **Geotechnical Report** - Recommendations included in the soils engineering report and the engineering geology report shall be incorporated in the grading plans or specifications. The dates of the soils engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepared the reports are required.
   a. Data regarding the nature, distribution and strength of existing soils.
   b. Conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary.
   c. Opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including the stability of slopes.
   d. An adequate description of the geology of the site.
   e. Conclusions and recommendations regarding the effect of geologic conditions on the proposed development.
   f. Opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors.
8. **Storm Letter –** A letter of availability is required for new and/or relocated connections to the public storm system, or when the scope of work to lots exceeding 15,000 sq. ft. in area, includes new impervious cover.

REGULAR GRADING

The plans shall include the following information:

1. **Vicinity Map** - A map depicting the general vicinity of the proposed site in relation to surrounding properties.
2. **Existing / Proposed Topography** - Limiting dimensions and depth of cut and fill, including and specifying on the plans elevations within 1 foot of adjacent property at the property line, for the perimeter of the site.
3. **Buildings on Site and Adjacent to the Site** - Location of any buildings or structures where work is to be performed, and the location of any buildings or structures on adjacent sites that is within 15 feet (4572 mm) of the proposed grading.
4. **Storm Letter -** A letter of availability is required for new and/or relocated connections to the public storm system, or when the scope of work to lots exceeding 15,000 sq. ft. in area, includes new impervious cover.

GEOTECH REPORTS

The building official may require *professional inspection and testing* by the soils engineer. When the building official has cause to believe that geologic factors may be involved, the grading will be required to conform to engineered grading.

A Geotech Report is required when any of the following apply:

1. Engineered grading is required.
2. Geologic factors exist.
3. A cut slope greater than 50 % exists or proposed.

PERMIT FEES

Grading and fill permits …… $**40.00**

Excavation permits …… …. **$35.00**

TECHNICAL PROVISIONS

Cut Slope. No steeper than is safe for the intended use and no steeper than 1 unit vertical in 2 units horizontal (50% slope) unless the permittee furnishes a geotechnical report (E109.2)

FILLS

Site Slope. No steeper than 1 unit vertical in 2 units horizontal (50% slope) on natural slopes. (E110.5)

Preparation. Scarify to provide a bond with the new fill. Remove vegetation, noncomplying fill, topsoil and other unsuitable materials. (E110.2)

Material. No detrimental amounts of organic material, or rock with maximum dimension greater than 12 inches. (E110.3)

Compaction. All fills shall be compacted to a minimum of 90 percent of maximum density. (E110.4)

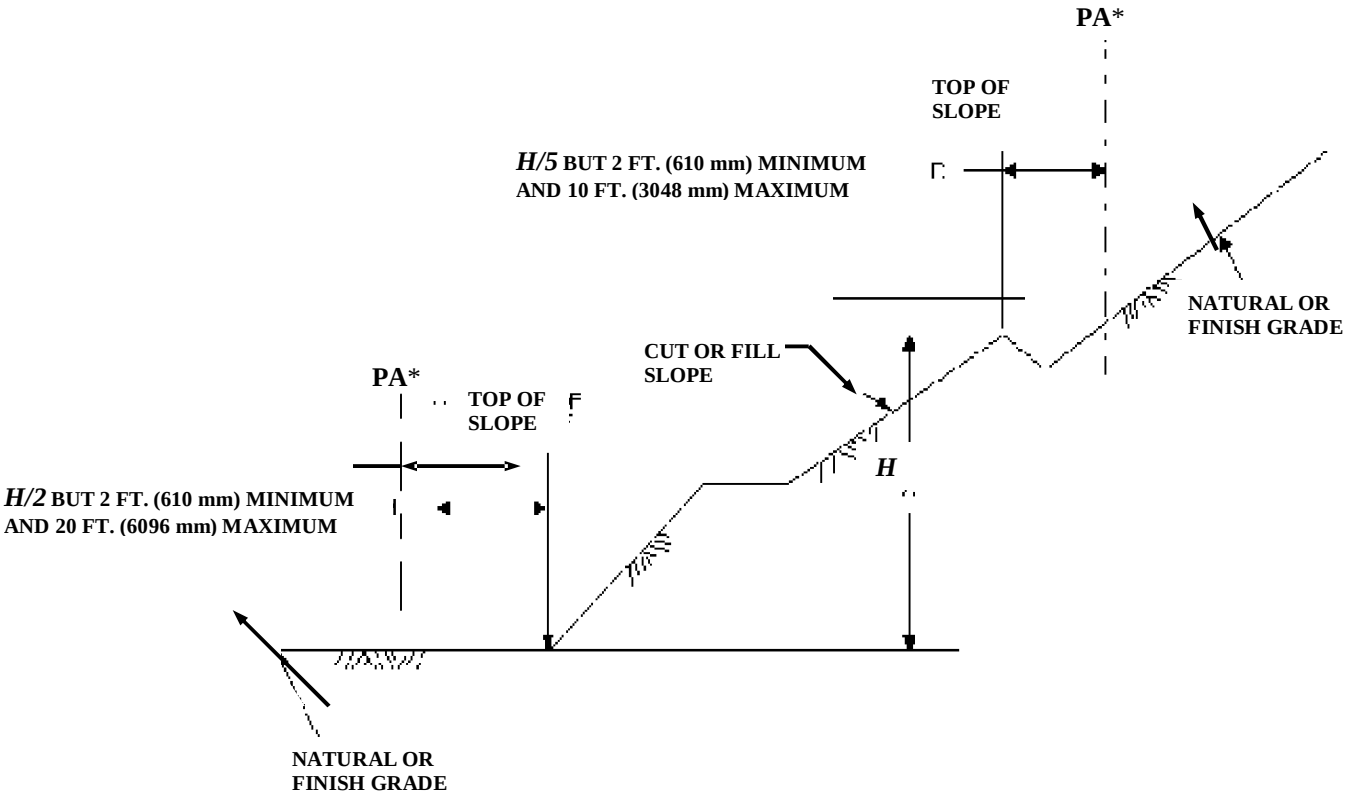
SETBACKS

Setback dimensions are horizontal distances measured perpendicular to the site boundary and are shown in Figure E111.1

Top of cut slope. 1/5 th height of cut from a site boundary line, minimum 2 feet up to 10 feet. The setback may need to be increased for any required interceptor drains. (E111.2)

Toe of fill slope. 1/2 height of slope from a site boundary line, minimum 2 feet up to 20 feet. If near the site boundary and adjacent off-site property development, special precautions are required such as 1) additional setbacks, or 2) retaining or slough walls, or 3) mechanical or chemical treatment of the fill slope surface, or 4) provisions for the control of surface waters. (E111.3)

Modification of slope location. The building official may require a recommendation by a qualified engineer to demonstrate that the intent of this section has been satisfied (E111.4)



DRAINAGE

For cut or fill slopes steeper than 1 unit vertical in 3 units horizontal (33.3% slope) drainage facilities and terracing are required.

Disposal. Drainage facilities shall be designed to carry waters to the nearest practicable drainage way approved by the building official or other appropriate jurisdiction. Erosion shall be prevented.

Interceptor drains. Paved interceptor drains required for 40-foot wide slopes to top of cut, minimum 3 inches concrete or gunite and reinforced. Minimum depth 12 inches minimum paved width 30 inches measured horizontally across the drain. The slope of drain shall provide positive flow. (E112.5)

EROSION CONTROL

Slopes. The faces of cut and fill slopes prepared and maintained to control against erosion by paving or effective planting. Installed as soon as practicable and prior to calling for final approval. (E113.1)

Other devices. Where necessary, check dams, cribbing, riprap or other devices or methods shall be employed to control erosion and provide safety (E113.2)

GRADING INSPECTION

Before starting work at the jobsite:

1) Post The Address on Site.
2) Post Weather Protected Inspection Cards
3) Provide Access to Weather Protected Plans

At Final Inspection at Jobsite - Provide Compaction Report to Inspection Team, or Inspector

Professional Inspection – Inspections by the professional engineer providing such services in accordance with Section E114.5 for “Engineered Grading” and as required by the Building Official for “Regular Grading”.

Professional Engineer - Observation and review as to the establishment of line, grade and surface drainage of the development area (E114.2) Observation during grading and testing for required compaction of fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this chapter. If revised plans are required during the course of the work a professional engineer shall prepare them. Revised recommendations relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, and the building official.

Permittee - Responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code, and the permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the consultants, the contractor and the building official. In the event of changed conditions, the permittee shall be responsible for informing the building official of such change and shall provide revised plans for approval. (E114.5)

Building Official - The building official shall visually inspect the project at the start and final stages of work requiring approval to determine that the professional consultants are exercising adequate control. (E114.6)

Engineer Notification of Noncompliance - If, in the course of fulfilling their respective duties under this chapter, the professional engineer, the soils engineer or the engineering geologist finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the building official. E114.7

Transfer of Responsibility - If the professional engineer of record is changed during grading, the work shall be stopped until the replacement has agreed in writing to accept their responsibility within the area of technical competence for approval upon completion of the work. It shall be the duty of the permittee to notify the building official in writing of such change prior to the recommencement of such grading. (E114.8)

COMPLETION OF WORK

Final Reports - Upon completion of the rough grading work and at the final completion of the work, the following reports and drawings and supplements thereto are required for engineered grading or when professional inspection is performed for regular grading, as applicable.

As-Built Grading Plan - Prepared by the professional engineer retained to provide such services in accordance with Section E114.5 showing original ground surface elevations, as-graded ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and of the outlets of subsurface drains. As-constructed locations, elevations and details of subsurface drains shall be shown as reported by the soils engineer. Professional engineers shall state that to the best of their knowledge the work within their area of responsibility was done in accordance with the final approved grading plan.

Notification of Completion. Permittee to notify Division when the grading operation is ready for final inspection, including installation of all drainage facilities and their protective devices, and all erosion-control measures have been completed in accordance with the final approved grading plan, and the required reports have been submitted.

Delays - The building official may require that grading operations and project designs be modified if *delays* occur which incur weather-generated problems not considered at the time the permit was issued.

3303.5 Water accumulation. Provision shall be made to prevent the accumulation of water or damage to any foundations on the premises or the adjoining property.

3304.1.1 Grading of filling. When a lot or plot is graded to a higher or lower finished grade level than the natural grade on adjacent property, the owner of such lot or plot shall provide a retaining wall or walls on his/her own property to protect the adjacent property from caving of earth or overflow of water.

3304.1.5 Drainage. Whenever the surface of a lot or plot is excavated, filled or graded, catch basins or connected underdrains shall be installed to preclude the accumulation of surface water. Surface water shall not be drained onto adjacent property that is not in the same ownership without written permission from the owner of the adjacent property, and existing natural ground drainage of the ground area surrounding the lot or plot that is excavated, filled, or graded shall not be obstructed. No condition shall be created nor any existing condition maintained whereby there will be upon any lot or plot excavations, depressions, pits, holes, gullies or other depressions that may accumulate and retain surface water. Any such condition shall be promptly abated and protected by filling in or by providing drainage as set forth above.

END OF GUIDELINE. CODE LANGUAGE TO FOLLOW

APPENDIX E
EXCAVATION AND GRADING

SECTION E101
PURPOSE

E101.1 General. The purpose of this appendix is to safeguard life, limb, property and the public welfare by regulating grading on private property

SECTION E102
SCOPE

E102.1 General. This appendix sets forth rules and regulations to control excavation, grading and earthwork construction, including fills and embankments; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction.

SECTION E103
PERMITS REQUIRED

E103.1 Permits required. Except as specified in Section E103.2 of this section, no person shall do any grading without first having obtained a grading permit from the building official.

E103.2 Exempted work. A grading permit is not required for the following:

1. When approved by the building official, grading in an isolated, self-contained area if there is no danger to private or public property.
2. An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. This shall not exempt any fill made with the material from such excavation or exempt any excavation having an unsupported height greater than 5 feet (1524 mm) after the completion of such structure.
3. Cemetery graves.
4. Refuse disposal sites controlled by other regulations.
5. Excavations for wells or tunnels or utilities.
6. Mining, quarrying, excavating, processing or stockpiling of rock, sand, gravel, aggregate or clay where established and provided for by law, provided such operations do not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.
7. Exploratory excavations under the direction of soil engineers or engineering geologists.
8. An excavation that (1) is less than 2 feet (610 mm) in depth or (2) does not create a cut slope greater than 5 feet (1524 mm) height and steeper than 1 unit vertical in 11/2 units horizontal (66.7% slope).
9. A fill less than 1 foot (305 mm) in depth and placed on natural terrain with a slope flatter than 1 unit vertical in 5 units horizontal (20% slope), or less than 3 feet (914 mm) in depth, not intended to support structures, that does not exceed 50 cubic yards (38.3 m^3) on any one lot and does not obstruct a drainage course.

Exemption from the permit requirements of this chapter shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this chapter or any other laws or ordinances.

E103.3 State and federal requirements. This Appendix is cumulative of all state and federal laws and regulations, including, but not limited to, Chapter 756 of the Texas Health and Safety Code and regulations issued thereunder and the Occupational Safety and Health Administration standards. No provision of this Appendix nor any permit issued hereunder shall be construed to authorize any work to be performed in a manner inconsistent with state or federal requirements, and it is the responsibility of the permit holder to ensure compliance therewith.

SECTION E104
HAZARDS

E104.1 General. Whenever the building official determines that any existing excavation or embankment or fill on private property has become a hazard to life and limb, or endangers property, or adversely affects the safety, use or stability of a public way or drainage channel, the owner of the property upon which the excavation or fill is located, or other person or agent in control of said property, upon receipt of notice in writing from the building official, shall within the period specified therein repair or eliminate such excavation or embankment so as to eliminate the hazard and be in conformance with the requirements of this code.

SECTION E105
DEFINITIONS

E105.1 General. For the purposes of this appendix, the definitions listed hereunder shall be construed as specified in this section.

APPROVAL - shall mean that the proposed work or completed work conforms to this chapter in the opinion of the building official.
AS-GRADED - is the extent of surface conditions on completion of grading.
BEDROCK - is in-place solid rock.
BENCH - is a relatively level step excavated into earth material on which fill is to be placed.
BORROW - is earth material acquired from an off-site location for use in grading on a site.
PROFESSIONAL ENGINEER - is a professional engineer registered in the state to practice in the field of professional works.
PROFESSIONAL ENGINEERING - is the application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design and construction of professional works.
COMPACTION - is the densification of a fill by mechanical means.
EARTH MATERIAL - is any rock, natural soil or fill or any combination thereof.
ENGINEERING GEOLOGIST - is a geologist experienced and knowledgeable in engineering geology.
ENGINEERING GEOLOGY - is the application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of professional works.
EROSION - is the wearing away of the ground surface as a result of the movement of wind, water or ice.
EXCAVATION - is the mechanical removal of earth material.
FILL - is a deposit of earth material placed by artificial means.
GEOTECHNICAL ENGINEER - See "soils engineer."
GRADE - is the vertical location of the ground surface.
- **Existing Grade -** is the grade prior to grading
- **Finish Grade -** is the final grade of the site that conforms to the approved plan.
- **Rough Grade -** is the stage at which the grade approximately conforms to the approved plan.

GRADING - is any excavating or filling or combination thereof.
KEY - is a designed compacted fill placed in a trench excavated in earth material beneath the toe of a proposed fill slope.
PROFESSIONAL INSPECTION - is the inspection required by this code to be performed by the professional engineer, soils engineer or engineering geologist. Such inspections include that performed by persons supervised by such engineers or geologists and shall be sufficient to form an opinion relating to the conduct of the work.
SITE - is any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.
SLOPE - is an inclined ground surface the inclination of which is expressed as a ratio of horizontal distance to vertical distance.
SOIL - is naturally occurring superficial deposits overlying bedrock.
SOILS ENGINEER (GEOTECHNICAL ENGINEER) - is an engineer experienced and knowledgeable in the practice of soils engineering (geotechnical) engineering.
SOILS ENGINEERING (GEOTECHNICAL ENGINEERING) - is the application of the principles of soils mechanics in the investigation, evaluation and design of professional works involving the use of earth materials and the inspection or testing of the construction thereof.
TERRACE - is a relatively level step constructed in the face of graded slope surface for drainage and maintenance purposes.

SECTION E106
GRADING PERMIT REQUIREMENTS

E106.1 Permits required. Except as exempted in Section E103 of this code, no person shall do any grading without first obtaining a grading permit from the building official. A separate permit shall be obtained for each site, and may cover both excavations and fills.

E106.2 Application. The provisions of Section 105.3 are applicable to grading. Additionally, the application shall state the estimated quantities of work involved.

E106.3 Grading designation. Grading in excess of 5,000 cubic yards (3825 m^3) shall be performed in accordance with the approved grading plan prepared by a professional engineer, and shall be designated as "engineered grading." Grading involving less than 5,000 cubic yards (3825 m^3) shall be designated "regular grading" unless the permittee chooses to have the grading performed as engineered grading, or the building official determines that special conditions or unusual hazards exist, in which case grading shall conform to the requirements for engineered grading.

E106.4 Engineered grading requirements. Application for a grading permit shall be accompanied by two sets of plans and specifications, and supporting data consisting of a soils engineering report and engineering geology report. The plans and specifications shall be prepared and signed by an individual licensed by the state to prepare such plans or specifications when required by the building official.

Specifications shall contain information covering construction and material requirements.

Plans shall be drawn to scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the nature and extent of the work proposed and show in detail that they will conform to the provisions of this code and all relevant laws, ordinances, rules and regulations. The first sheet of each set of plans shall give location of the work, the name and address of the owner, and the person by whom they were prepared.

The plans shall include the following information:

1. General vicinity of the proposed site.
2. Property limits and accurate contours of existing ground and details of terrain and area drainage.
3. Limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.
4. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area and the estimated runoff of the area served by any drains.
5. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners that are within 15 feet (4572 mm) of the property or that may be affected by the proposed grading operations.
6. Recommendations included in the soils engineering report and the engineering geology report shall be incorporated in the grading plans or specifications. When approved by the building official, specific recommendations contained in the soils engineering report and the engineering geology reports, which are applicable to grading, may be included by reference. The dates of the soils engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepared the reports.

E106.5 Soils engineering report. The soils engineering report required by Section E106.4 shall include data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including the stability of slopes.

E106.6 Engineering geology report. The engineering geology report required by Section E106.4 shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors.

E106.7 Liquefaction study. The building official may require a geotechnical investigation in accordance with Sections 1802.4 when, during the course of an investigation, all of the following conditions are discovered, the report shall address the potential for liquefaction:

1. Shallow ground water, 50 feet (15 240 mm) or less.

2. Unconsolidated sandy alluvium.
3. Seismic Zones C and D.

E106.8 Regular grading requirements. Each application for a grading permit shall be accompanied by a plan in sufficient clarity to indicate the nature and extent of the work. The plans shall give the location of the work, the name of the owner and the name of the person who prepared the plan. The plan shall include the following information:

1. General vicinity of the proposed site.
2. Limiting dimensions and depth of cut and fill
3. Location of any buildings or structures where work is to be performed, and the location of any buildings or structures within 15 feet (4572 mm) of the proposed grading.

E106.9 Issuance. The provisions of Section 105.3 are applicable to grading permits. The building official may require that grading operations and project designs be modified if delays occur which incur weather-generated problems not considered at the time the permit was issued.

The building official may require professional inspection and testing by the soils engineer. When the building official has cause to believe that geologic factors may be involved, the grading will be required to conform to engineered grading.

SECTION E107
GRADING FEES

E107.1 General. Fees shall be assessed in accordance with the provisions of this section or shall be as set forth in the fee schedule adopted by the jurisdiction.

E107.2 Grading permits fees. A fee for each grading permit shall be paid to the building official as set forth in Section 117.2.1. Separate permits and fees shall apply to retaining walls or major drainage structures as required elsewhere in this code. There shall be no separate charge for standard terrace drains and similar facilities

SECTION E108
BONDS

E108.1 Bond required. The building official may require bonds in such form and amounts as may be deemed necessary to ensure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions.

In lieu of a surety bond the applicant may file a cash bond or instrument of credit with the building official in an amount equal to that which would be required in the surety bond.

SECTION E109
CUTS

E109.1 General. Unless otherwise recommended in the approved soils engineering or engineering geology report, cuts shall conform to the provisions of this section.

In the absence of an approved soils engineering report, these provisions may be waived for minor cuts not intended to support structures.

E109.2 Slope. The slope of cut surfaces shall be no steeper than is safe for the intended use and shall be no steeper than 1 unit vertical in 2 units horizontal (50% slope) unless the permittee furnishes a soils engineering or an engineering geology report, or both, stating that the site has been investigated and giving an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property.

SECTION E110
FILLS

E110.1 General. Unless otherwise recommended in the approved soils engineering report, fills shall conform to the provisions of this section.

In the absence of an approved soils engineering report, these provisions may be waived for minor fills not intended to support structures.

E110.2 Preparation of ground. Fill slopes shall not be constructed on natural slopes steeper than 1 unit vertical in 2 units horizontal (50% slope). The ground surface shall be prepared to receive fill by removing vegetation, noncomplying fill, topsoil and other unsuitable materials scarifying to provide a bond with the new fill and, where slopes are steeper than 1 unit vertical in 5 units horizontal (20% slope) and the height is greater than 5 feet (1524 mm), by benching into sound bedrock or other competent material as determined by the soils engineer. The bench under the toe of a fill on a slope steeper than 1 unit vertical in 5 units horizontal (20% slope) shall be at least 10 feet (3048 mm) wide. The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. When fill is to be placed over a cut, the bench under the toe of fill shall be at least 10 feet (3048 mm) wide but the cut shall be made before placing the fill and acceptance by the soils engineer or engineering geologist or both as a suitable foundation for fill.

E110.3 Fill material. Detrimental amounts of organic material shall not be permitted in fills. Except as permitted by the building official, no rock or similar irreducible material with a maximum dimension greater than 12 inches (305 mm) shall be buried or placed in fills.

Exception: The building official may permit placement of larger rock when the soils engineer properly devises a method of placement, and continuously inspects its placement and approves the fill stability. The following conditions shall also apply:

1. Prior to issuance of the grading permit, potential rock disposal areas shall be delineated on the grading plan.
2. Rock sizes greater than 12 inches (305 mm) in maximum dimension shall be 10 feet (3048 mm) or more below grade, measured vertically.
3. Rocks shall be placed so as to assure filling of all voids with well-graded soil.

E110.4 Compaction. All fills shall be compacted to a minimum of 90 percent of maximum density.

E110.5 Slope. The slope of fill surfaces shall be no steeper than is safe for the intended use. Fill slopes shall be no steeper than 1 unit vertical in 2 units horizontal (50% slope).

SECTION E111
SETBACKS

E111.1 General. Cut and fill slopes shall be set back from site boundaries in accordance with this section. Setback dimensions shall be horizontal distances measured perpendicular to the site boundary. Setback dimensions shall be as shown in Figure E111.1

E111.2 Top of cut slope. The top of cut slopes shall not be made nearer to a site boundary line than one fifth of the vertical height of cut with a minimum of 2 feet (610 mm) and a maximum of 10 feet (3048 mm). The setback may need to be increased for any required interceptor drains.

E111.3 Toe of fill slope. The toe of fill slope shall be made not nearer to the site boundary line than one half the height of the slope with a minimum of 2 feet (610 mm) and a maximum of 20 feet (6096 mm). Where a fill slope is to be located near the site boundary and the adjacent off-site property is developed, special precautions shall be incorporated in the work as the building official deems necessary to protect the adjoining property from damage as a result of such grading. These precautions may include but are not limited to:

1. Additional setbacks.
2. Provision for retaining or slough walls.
3. Mechanical or chemical treatment of the fill slope surface to minimize erosion.
4. Provisions for the control of surface waters.

E111.4 Modification of slope location. The building official may approve alternate setbacks. The building official may require an investigation and recommendation by a qualified engineer or engineering geologist to demonstrate that the intent of this section has been satisfied.

SECTION E112
DRAINAGE AND TERRACING

E112.1 General. Unless otherwise indicated on the approved grading plan, drainage facilities and terracing shall conform to the provisions of this section for cut or fill slopes steeper than 1 unit vertical in 3 units horizontal (33.3% slope).

E112.2 Terrace. Terraces at least 6 feet (1829 mm) in width shall be established at not more than 30-foot (9144 mm) vertical intervals on all cut or fill slopes to control surface drainage and debris except that where only one terrace is required, it shall be at mid-height. For cut or fill slopes greater than 60 feet (18 288 mm) and up to 120 feet (36 576 mm) in vertical height, one terrace at approximately mid-height shall be 12 feet (3658 mm) in width. Terrace widths and spacing for cut and fill slopes greater than 120 feet (36 576 mm) in height shall be designed by the professional engineer and approved by the building official. Suitable access shall be provided to permit proper cleaning and maintenance.

Swales or ditches on terraces shall have a minimum gradient of 5 percent and must be paved with reinforced concrete not less than 3 inches (76 mm) in thickness or an approved equal paving. They shall have a minimum depth at the deepest point of 1 foot (305 mm) and a minimum paved width of 5 feet (1524 mm).

A single run of swale or ditch shall not collect runoff from a tributary area exceeding 13,500 square feet (1254.2 m^2) (projected) without discharging into a down drain.

E112.3 Subsurface drainage. Cut and fill slopes shall be provided with subsurface drainage as necessary for stability

E112.4 Disposal. All drainage facilities shall be designed to carry waters to the nearest practicable drainage way approved by the building official or other appropriate jurisdiction as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of nonerosive downdrains or other devices.

Building pads shall have a drainage gradient of 2 percent toward approved drainage facilities, unless waived by the building official.

Exception: The gradient from the building pad may be 1 percent if all of the following conditions exist throughout the permit area:

1. No proposed fills are greater than 10 feet (3048 mm) in maximum depth.
2. No proposed finish cut or fill slope faces have a vertical height in excess of 10 feet (3048 mm).
3. No existing slope faces steeper than 1 unit vertical in 10 units horizontal (10% slope) have a vertical height in excess of 10 feet (3048 mm).

E112.5 Interceptor drains. Paved interceptor drains shall be installed along the top of all cut slopes where the tributary drainage area above slopes toward the cut and has a drainage path greater than 40 feet (12 192 mm) measured horizontally. Interceptor drains shall be paved with a minimum of 3 inches (76 mm) of concrete or gunite and reinforced. They shall have a minimum depth of 12 inches (305 mm) and a minimum paved width of 30 inches (762 mm) measured horizontally across the drain. The building official shall approve the slope of drain.

SECTION E113
EROSION CONTROL

E113.1 Slopes. The faces of cut and fill slopes shall be prepared and maintained to control against erosion. This control may consist of effective planting. The protection for the slopes shall be installed as soon as practicable and prior to calling for final approval. Where cut slopes are not subject to erosion due to the erosion-resistant character of the materials, such protection may be omitted.

E113.2 Other devices. Where necessary, check dams, cribbing, riprap or other devices or methods shall be employed to control erosion and provide safety

SECTION E114
GRADING INSPECTION

E114.1 General. Grading operations for which a permit is required shall be subject to inspection by the building official. Professional inspection of grading operations shall be provided by the professional engineer, soils engineer and the engineering geologist retained to provide such services in accordance with Section E114.5 for engineered grading and as required by the building official for regular grading.

E114.2 Professional engineer. The professional engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required during the course of the work they shall be prepared by the professional engineer.

E114.3 Soils engineer. The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this chapter. Revised recommendations relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the permittee, the building official and the professional engineer.

E114.4 Engineering geologist. The engineering geologist shall provide professional inspection within such engineer's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer.

E114.5 Permittee. The permittee shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this code, and the permittee shall engage consultants, if required, to provide professional inspections on a timely basis. The permittee shall act as a coordinator between the consultants, the contractor and the building official. In the event of changed conditions, the permittee shall be responsible for informing the building official of such change and shall provide revised plans for approval.

E114.6 Building official. The building official shall inspect the project at the various stages of work requiring approval to determine that the professional consultants are exercising adequate control.

E114.7 Notification of noncompliance. If, in the course of fulfilling their respective duties under this chapter, the professional engineer, the soils engineer or the engineering geologist finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the permittee and to the building official.

E114.8 Transfer of responsibility. If the professional engineer, the soils engineer, or the engineering geologist of record is changed during grading, the work shall be stopped until the replacement has agreed in writing to accept their responsibility within the area of technical competence for approval upon completion of the work. It shall be the duty of the permittee to notify the building official in writing of such change prior to the recommencement of such grading.

SECTION E115
COMPLETION OF WORK

E115.1 Final reports. Upon completion of the rough grading work and at the final completion of the work, the following reports and drawings and supplements thereto are required for engineered grading or when professional inspection is performed for regular grading, as applicable.

1. An as-built grading plan prepared by the professional engineer retained to provide such services in accordance with Section E114.5 showing original ground surface elevations, as-graded ground surface elevations, lot drainage patterns, and the locations and elevations of surface drainage facilities and of

the outlets of subsurface drains. As-constructed locations, elevations and details of subsurface drains shall be shown as reported by the soils engineer.

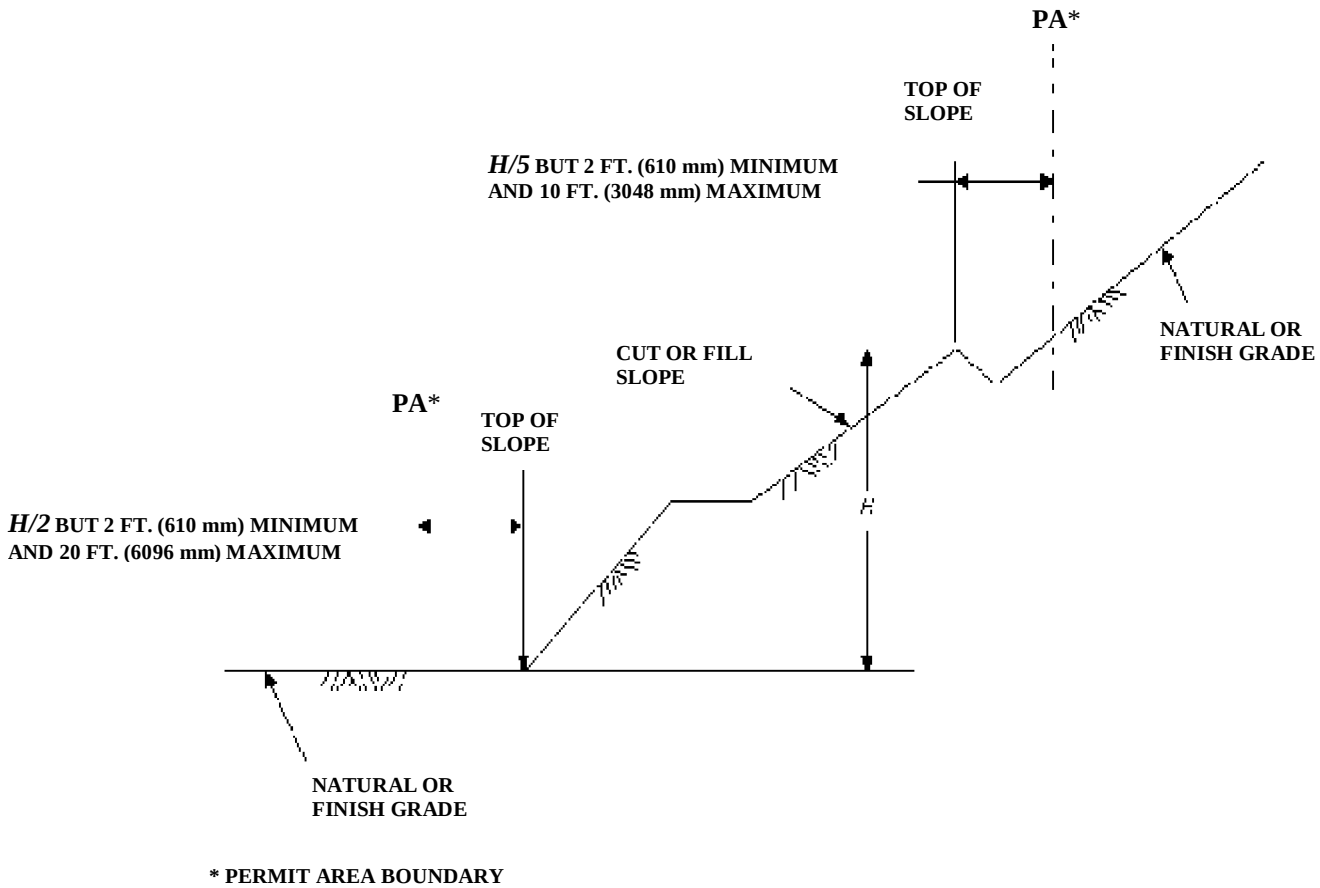
Professional engineers shall state that to the best of their knowledge the work within their area of responsibility was done in accordance with the final approved grading plan.

2. A report prepared by the soils engineer retained to provide such services in accordance with Section E114.3, including locations and elevations of field density tests, summaries of field and laboratory tests, other substantiating data, and comments on any changes made during grading and their effect on the recommendations made in the approved soils engineering investigation report.

   Soils engineers shall submit a statement that, to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved soils engineering report and applicable provisions of this chapter.
3. A report prepared by the engineering geologist retained to provide such services in accordance with Section E114.5, including a final description of the geology of the site and any new information disclosed during the grading and the effect of same on recommendations incorporated in the approved grading plan. Engineering geologists shall submit a statement that, to the best of their knowledge, the work within their area of responsibility is in accordance with the approved engineering geologist report and applicable provisions of this chapter.

E115.2 Notification of Completion. The permittee shall notify the building official when the grading operation is ready for final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices, and all erosion-control measures have been completed in accordance with the final approved grading plan, and the required reports have been submitted.

Figure E111.1 – Setback Dimensions



Public Works & Engineering Department
Planning & Development Services Division

GRADING PERMITS FOR EXCAVATIONS AND FILL

A. STEPS

I. Building Permit Application - Complete the "OTHER" line under the SCOPE OF PROJECT section indicating: ***Grading***, ***Excavation Only***, or ***Fill***.

II. Plans:

A. Types
1. Residential – May complete the Residential "Regular" Grading form unless subject to "Engineered" grading.
2. Commercial – Submit grading drawings, either "Regular" or "Engineered" as applicable.

B. Utility Easements (U.E.) – Concrete drainage swale can be created over U.E. as long as Public Works Guidelines are followed to show expansion joints every 10 feet across and entirely along edge of easement.

C. Roof Drainage - Roof water discharged to grade through gutters toward property line:
1. More than 10 feet away from the adjacent property line may be carried by a dirt swale, ditch or graded surface to the public storm drainage system by a minimum 10% slope
2. 7 feet to 10 feet must have an asphalt or concrete swale provided with minimum 10% slope
3. Less than 7 feet from a property line must have an asphalt or concrete swale at minimum 10 % slope, with a 6-inch curb located at the property line

D. Retaining walls - retaining walls shall extend a minimum of 6-inches above the highest ground level on ether side of the wall.
1. Must be engineered if elevation difference at property line exceeds 1 foot.
2. Where wood is used for retaining walls an engineers statements is required to address minimum 25 year warranty and decay resistance requirements for wood used in contact with:
    a. Earth, and
    b. Water (fresh water, and/or saltwater)

E. Unpermitted Fills - plans shall show existing/before & proposed/after conditions

F. Grade elevations - Site elevations for the perimeter of the site are required for grades on *adjacent property* within 12-inches of property line. Acceptable on-site grade elevations for drainage plans may include:
1. Existing & proposed *topographical surveys* and/or,
2. Existing & proposed drainage plans identifying *site elevations laid out in a grid* type format approximately 15ft to 20ft in every direction and/or,
3. Existing & proposed drainage plans with drainage flow directional arrows laid out in a grid type format approximately 15 ft to 20 ft in every direction, and/or,
4. Existing & proposed drainage plans identifying site contour lines and elevations, showing elevation differences at least every 12-inches.

G. The plans showing the existing condition are required to identify all existing drainage courses.

Residential "*Regular Grading Permit*" for Excavation and Fill

Please Print:
Owner' Name _____ Project Number: _____

Owner's Signature: _____ Date: _____

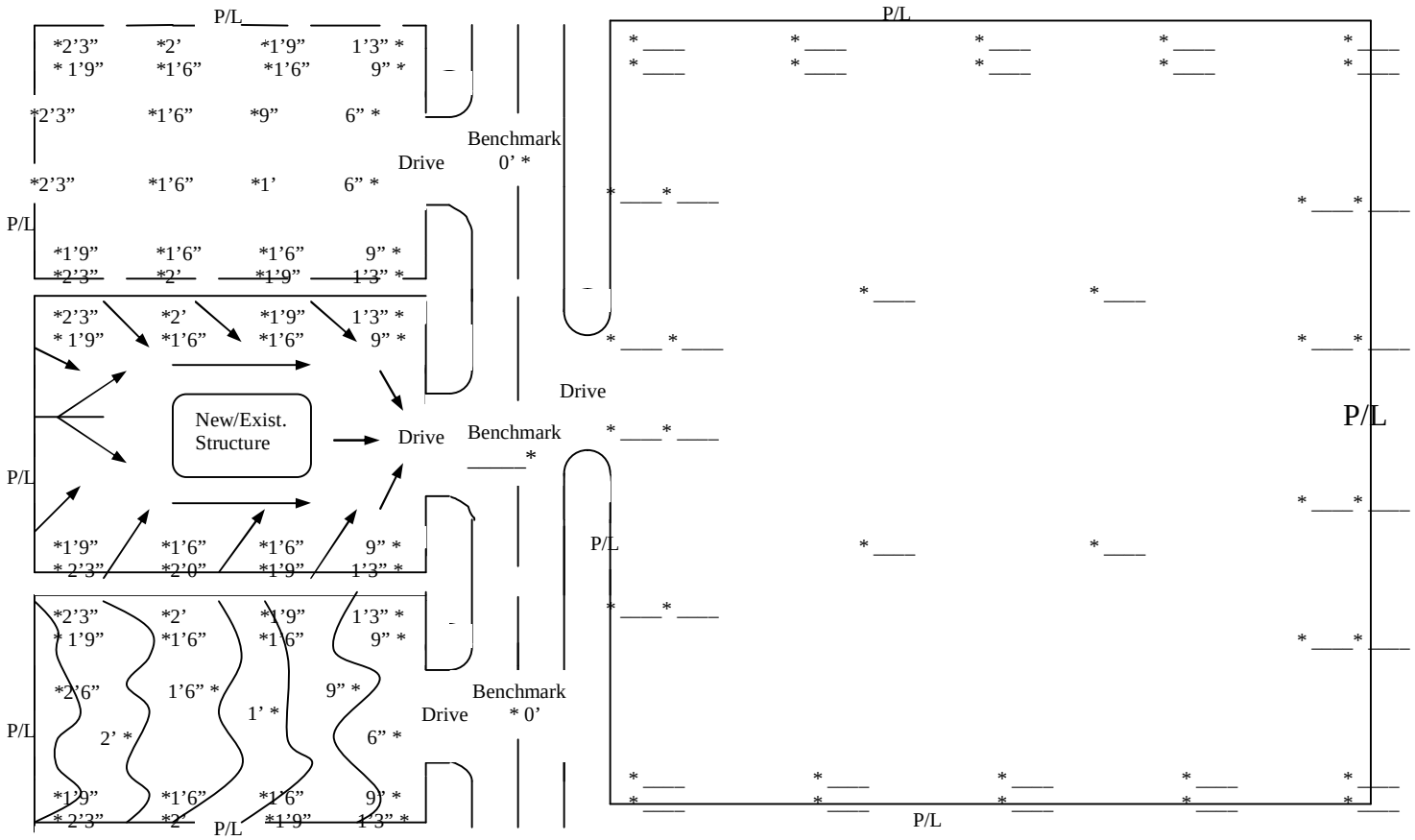
Project Address: _____

Fill $40.00 (FG) _____ Excavation $35.00 (13) _____ Total Cubic Yards Graded _____
(Engineered plans are required when greater than 5000 cubic yards)

When a fill or excavation permit is required two sets of drawings must be provided that will clearly show the proposed scope of work and include the existing site elevations and the proposed site elevations. The plans are required to include the following information:		
1.	Vicinity Map	A general vicinity map of the site in question should be included.
2.	Existing and Proposed Topography	Site plans identifying elevations, and limiting dimensions and depth of cut and fill, including elevations within 1 foot of adjacent property at the property line.
3.	Buildings in Area and Adjacent to Area	Location of any building or structures where work is to be performed, and the location of any building or structures within 15 foot of the proposed grading.
4.	Storm Letter of Availability (If Required)	A letter of availability is required for new and/or relocated connections to the public storm system, or when the scope of work on any lot exceeding 15,000 sq. ft. includes new impervious cover.
5.	Retaining Walls (If Required) (Plans must be designed by an engineer, sealed, signed & dated.)	A retaining wall is required at property lines with an elevation difference of 12 inches or more. All wood used in retaining wall construction is required to resist decay from contact with earth and water for 25 years minimum and be noted as such on the plans.
NOTES: * Provide the elevation of the ROW centerline as the "*Benchmark*"; show all other elevations relative to the "*Benchmark.*" * Site elevations should be provided starting at points on the perimeter property line every 15-20 ft for the entire perimeter of the property and 12 inches inside the property line every 15ft to 20ft, as-well-as at points in every direction 15-20 ft apart. Elevations are required.		

Below are examples of drawing types for the site that may be used to show the proposed work.

* Enter the benchmark, & site elevations on the form below, sign, & date.



(If different from owner)
Print Applicant Name: _____ Applicant Signature: _____